DECLARATION

I, the undersigned, Yukuo KATAYAMA, residing at 21-25, Daikyo-cho, Shinjuku-ku, Tokyo, Japan, hereby declare and state that:

I graduated from Hokkaido University in 1969 and received a doctorate on engineering from Hokkaido University in 1978; and has been the chairman of K.E.M. Co., Ltd from July 2005.

I am the inventor of the invention of US Patent Application Serial No. 10/564,988, entitled METHOD FOR DEWATERING WATER-CONTAINING COAL;

The following is the details of the experiments through which I reached the present invention;;

1) First, I used a conventional screw-type of extruder which had a single screw and was 4 inches in inner diameter of a cylinder (vessel) and 20 inches in length. Brown coal was fed while the exit was closed in order to give a longer residence time and, thereby, higher accumulated force exerted on the brown coal. When the brown coal of the amount corresponded to approximately 15 % of the capacity (inner volume) of the extruder was fed, a current which was input to a motor started to increase. When the brown coal of the amount corresponded to approximately 60 % of the capacity was fed, the load on the motor exceeded the rated power, so that a safety device (auto-thermal) was activated to stop the rotation of the extruder. The brown coal was a little wet and tightly compacted between the gaps of the screw blades closer to the exit.

The extruder used had an only small opening between the screw and the wall of the cylinder (vessel). Accordingly, almost no material could go back toward the inlet. Then, I changed the opening between the screw and the wall of the cylinder to 2 mm (0.08 inch) and repeated the same experiments as mentioned above. However, it was found that de-watering proceeded scarcely. This is probably because the return flow of the brown coal in the direction of from the outlet to the inlet collides against the forward flow of the brown coal in the direction of from the inlet to the outlet, so the return flow would stop.

2) Learning from these failures, I adopted another instrument which was twin-shaft screw type kneader with in-vessel effective volume of 8 liters, in-vessel length of 600mm, longer vessel diameter of 160 mm, shorter vessel diameter of 100 mm, one screw was to send a material forward and the another screw was to send a material backward. The

exit was closed and brown coal was fed as described in the present Comparative Example 1. After an hour operation, the material was taken out, which was a highly viscous slurry. This means that de-watering occurred. After the slurry was left in a closed vessel for several days, most of water, which had once removed from the brown coal, returned into the brown coal so that the material was not in a slurry state any more.

3) Then, I reorganized the instrument. That is, the pitches between the total 13 stirring blades of each screw were changed as described in paragraph 0023 of the specification. The pitch between the blades at the nearest spot to the coal supply port (inlet) was 70 mm; the pitches decrease by 4 mm toward the downstream side in sequence; and the pitch at the nearest spot to the product-withdrawing port (outlet) was 22 mm. The results are as described in Example 1. It should be noted that in Fig. 2, the apparatus looks like having only one screw, but Fig.2 is to show the positional relation of the parts, and actual design of the apparatus is as described in paragraph 0023.

4) I am of the opinions that as seen from 1) and 3) above, usual extruders as described in Kamei cannot cause the high shearing force of 0.01 to 20 MPa.

I further declare under the penalty of perjury of the laws of the United States that the foregoing is true and correct to the best of my information and belief.

14 December 2009

day month year

Yukuo Katayama

Yukuo KATAYAMA